

REMARKS

Claims 1-5 and 7-15 were previously pending.

Claims 1-4 have been withdrawn.

Claims 8, 14 and 15 are rejected under 35 U.S.C. §112, second paragraph.

Claims 5, 7 and 9-13 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,028,362 issued to Omura (“Omura”).

Claims 7 and 8 are cancelled, without prejudice.

Claim 5, 14 and 15 are amended. Support for the limitations can be found in FIGS. 3-4 and the accompanying text.

No new matter is added.

Claims 5 and 9-15 remain in the case.

Applicant requests reconsideration and allowance of the claims in light of the above amendments and following remarks.

Claim Rejections – 35 U.S.C. §112, second paragraph

Claims 8, 14 and 15 are rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 8, 14 and 15 are rejected as being incomplete because these claims depend on a cancelled claim 6.

Claim 8 is cancelled, without prejudice. Thus, the rejection of claim 8 is now moot. Also, claims 14 and 15 are amended to properly depend on claim 5. Thus, the rejection of claims 14 and 15 are now overcome.

Claim Rejections – 35 U.S.C. 102(b)

Claims 5, 7 and 9-13 are rejected under 35 U.S.C. §102(b) as being anticipated by Omura (U.S. Patent No. 6,028,362).

The rejections are respectfully traversed.

Claim 5 is amended to recite,

“forming a second metal layer within the contact hole overlying the first sub-plug and on the diffusion barrier layer, the second metal layer being formed thick enough to substantially completely fill the contact hole; and

planarizing the second metal layer until a top surface of the diffusion barrier layer on the insulating layer is exposed, thereby forming a second sub-plug that fills an upper portion

of the contact hole on the first sub-plug, the second sub-plug having a substantially flat surface.”

The Examiner has argued, in the official action, that Omura teaches, for example, “forming a second sub-plug (54) that fills an upper portion of the contact hole (44s) on the first sub-plug (52s).”

However, the second barrier metal layer (54) of Omura is very thin and conformally formed on the spacer (52s) remaining in the trench (44s). Therefore, the second barrier metal layer (54) cannot fill the contact hole (44s). Moreover, the portion of the second barrier metal layer (54) right above the contact hole (44s) is not planarized. In other words, the upper surface of the second barrier metal layer (54) is not planarized. Thus, the upper surface of the second barrier metal layer (54) has a step, not a flat surface.

In contrast, the second sub-plug (24) of the claimed invention has a substantially flat surface because the upper surface thereof has been planarized. In addition, the diffusion barrier layer (14) is used as a CMP stopper in the claimed invention. However, Omura merely states that planarization is performed until the insulating layer (44) is exposed and therefore does not teach “planarizing the second metal layer until a top surface of the diffusion barrier layer on the insulating layer is exposed,” as recited in claim 5.

Thus, Omura does not teach all of the limitations of claim 5.

For these reasons, Omura does not anticipate claim 5. Also, claims 9-15, which depend from claim 5 and recite features that are neither taught nor disclosed in the cited references, are also allowable.

For the foregoing reasons, reconsideration and allowance of claims 5 and 9-15 of the application as amended is solicited. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

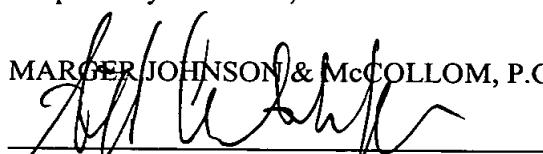
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Respectfully submitted,

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